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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/674,845

09/29/2003

William Frank Micka

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4448

46917

7590

06/23/2006

KONRAD RAYNES & VICTOR, LLP.

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EXAMINER

THOMAS, SHANE M

ART UNIT

PAPER NUMBER

2186

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/674,845	Applicant(s) MICKA ET AL.	
	Examiner Shane M. Thomas	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8,9,11,19,20,22,30,31 and 33 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7,12,14,15,17,18,23,25,26,28 and 29 is/are rejected.
- 7) ☒ Claim(s) 2,5,10,13,16,21,24,27 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

Examiner Shane Thomas has assumed prosecution of the present application.

This Office action is responsive to the amendment/response filed 4/4/2006 (herein “the Response”). Claims 1-33 remain pending. Applicants' arguments have been carefully considered, and have been found to be persuasive. Accordingly, this action has been made Non-Final.

Excerpts from all prior art references cited in this Office action shall use the shorthand notation of (column # / lines A-B) to denote the location of a specific citation. For example, a citation present on column 2, lines 1-6, of a reference shall herein be denoted as “(2/1-6).”

In the response to this Office action, the Examiner politely requests that support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line numbers in the specification and/or drawing figure(s). This will assist the Examiner in prosecuting this application.

Excerpts from all prior art references cited in this Office action shall use the shorthand notation of [column # / lines A-B] to denote the location of a specific citation. For example, a citation present on column 2, lines 1-6, of a reference shall herein be denoted as “[2/1-6].”

Response to Arguments

Applicant's arguments, see Response pages 2-9, with respect to the rejections of claims 1-33 under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new grounds of rejection is made in view of Micha, (U.S. Patent No. 5,592,618), and Achiwa (U.S. Patent No. 7,013,372).

Applicant argues that the previous rejection was inadvertently made under 35 U.S.C. 102(e) instead of 102(a). The Examiner respectfully traverses. 35 U.S.C. 102(e) states that a person will be entitled to a patent unless:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) **a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent**, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

§102(a) states:

(a) the invention was known or used by others in this country, or patented or **described in a printed publication** in this or a foreign country, before the invention thereof by the applicant for a patent.

The **printed publication date** for the Bish et al. patent that was previously applied in the non-final Office action filed 1/4/2006 was 10/15/2002 while the **filing date** for the Bish patent was 9/7/1999. Therefore, by rejecting the claims under 35 U.S.C. 102(e) and not 102(a), in order to overcome the rejection by means of a 37 C.F.R. 1.131 affidavit, Applicant would have had to establish prior invention before **9/7/1999**, rather than **10/15/2002**.

Claim Objections

Claims 5,16, and 27, are objected to because of the following informalities:

As per claims 5, 16, and 27, the Examiner recommends amending the instance of the term “the data structures” (lines 2-3 of claim 5 for example) to “either the first or second data structure,” and the second instance of the term “the data structures” (line 4 of claim 5) to “the first or second data structure.” Such amendments would clearly indicated the invention is claiming just the 2 data structures originally presented in base claims 1,12, and 23, as the term “the data structures” have not been properly defined in the respective base claims. Appropriate correction is required.

As per claims 6,17, and 28, the Examiner recommends amending the term “the data structures” to “the first and second data structures” as the former term has not been properly defined in the respective base claim.

As per claims 10,21, and 32, the term “the remote site” should be amended to “the third storage site” as the former term has not been properly defined in the respective base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,4,6,7,12,14,15,17,18,23,25,26,28, and 29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Micka et al. (U.S. Patent No. 5,592,618) in view of Achiwa et al. (U.S. Patent No. 7,013,372).

As per claims 1,12, and 23, Micka teaches **receiving a command to form a consistency group** (instruction of the system that begins the method shown in figure 7) **with respect to data received at a first storage site** (421 figure 1) **that is mirrored to second storage site** (431 figure 1), **providing a first data structure** (portions of the journal 1213 - figure 12 - that contain the records for a part of a next consistency group, which is formed after a current consistency group - [13/40-42] and [13/53-56]) **indicating updates to the first storage [12/51-53] site not included in the consistency group that are received after the command** (as updates to the first storage site can continuously be sent to the second storage site [14/36-15/5]), **providing a second data structure** (portion of journal 1213 that contains the records for a current consistency group - [12/54-65], [13/2-6], and [13/38-40]) **indicating updates to the first storage site in the consistency group to be formed** [12/63-65].

Micka does not specifically teach a third storage site. Achiwa teaches a third storage site (figure 1) for use in advanced disaster recovery processing. By utilizing a third site in the processing system of figure 1, thereby configuring the system into a clustering system, Achiwa

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teaches that availability of the information processing in the event of disasters can be improved [1/25-35]. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the consistency group processing method of Micka with the teaching of clustering a data redundant system among three storage sites of Achiwa in order to gain the benefits discussed, which involves improving the availability of the information processing in the event of a disaster. Further, it can be seen that another site in which backup data would have been stored to would have doubled the level of data redundancy in the system of Micka (two backup sites instead of one) and thereby improved the ability to recover lost data.

Micka teaches **transmitting a command to cause data copied to a second storage site that is part of a consistency group to be copied to a third storage location** (figure 3 shows backup data being stored at both a second storage apparatus and a third storage apparatus, thereby showing that data that is copied to the second storage site 20 is also copied to the third storage site) and **receiving an indication when the data in the second storage site that is part of the consistency group is copied to the third storage site** [12/16-32] (via acknowledgement signals). It should be noted that the “data in the second storage ... is copied to the third site” as the first site copies the same data to both the second and third sites.

As per claims 3, 14, and 25, the Examiner is considering the second and third sites of figure 1 of Achiwa to comprise journals (1213 of figure 12 of Micka) as (1) both the second and third sites are discussed as being replication destinations (abstract) and (2) the second site of Micka is considered a replication destination since the updates to the first site are transferred to the second site as shown in figure 12 of Micka. It follows as such that it therefore could have

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been seen that both the second and third sites would have comprised a first data structure and a second data structure (as defined in the discussion of claims 1,12 and 23 above as being parts of the journal 1213 of Micka). Achiwa teaches **detecting a failure at the second storage site** [6/44-52], **determining whether the data in the consistency group was copied to the third site** (since Achiwa teaches the consistency data being sent from the first to the third site in figure 3, it would have been seen under normal operating conditions that the third storage site would have itself determined whether the data in the consistency group was copied [from the first site] to the third site, as this process is taught in figure 8 of Micka with reference to the journal 1213), and **copying the updated at the first storage site indicated in the first data structure to the third storage site after determining that the data in the consistency group was copied to the third site** (this is taught with respect to figures 7 and 8 Micka since the data indicated by the first data structure of the third site is the updates to the first site that are not part of the current consistency group - these updates from the first site are stored [i.e. step 1160 of figure 8 of Micka] at the third site during their respective consistency group [i.e. the next consistency group after the current consistency group], as the data indicated by the first data structure cannot be stored in the volume of the third drive until the previous consistency group is stored - [13/40-42] and [13/53-56] of Micka).

As per claims 4,15, and 26, Micka teaches **copying the data at the first storage site indicated in the first and second data structures (of the third site) to the third storage site after determining that the data in the consistency group was not copied to the third storage site**. This can be seen with relation to figures 7 and 8 again. A current set of consistency group records must be stored before a next group [13/38-63], thus it would have been obvious to one

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having ordinary skill in the art to have seen that the if the data for a current consistency group was not yet stored (i.e. all data records associated with consistency group 1 shown in figure 6) as indicated in the second data structure that comprises the entries for the current consistency group, it would have been stored as soon as all of the data for the consistency group was obtained from the first site [13/2-13]. After the current consistency group's records were stored at the third site, the records indicated by the first data structure would have then been stored to the third storage site with the next consistency group storage step (1160, figure 8). Therefore, it can be seen the data at the first storage site that was indicated in the first and second structures (of the third site) would have been stored in the volume of the third site, but only in their respective consistency groups.

As per claims 6,17, and 28, Achiwa teaches **synchronously copying updates from the first storage site to the second storage site** [9/29-58], and Micka teaches **the data structures (of journal 1213) indicate updates to the first storage site that were successfully synchronously copied to the second storage device** as it can be seen that only when the data structures of the journal 1213 contain the entries from the first storage site, can the success of the synchronous transfer be determined. In other words, if the data structures contain the data sent from the first storage site, then it is inherent that the copying to the second site was successful as the data structures of the journal 1213 are contained within the second site as shown in figure 9 of Micka. Further, the second site has the ability to detect which updates from the first storage site are needed to be synchronously transferred as a resend request can be made for all unaccounted for updates of the first storage site - [13/2-13 of Micka].

As per claims 7,18, and 29, Achiwa teaches **the first and second storage sites are separated by a first distance and the second and third storage sites are separated by a second distance, wherein the second distance is substantially greater than the first distance** in [9/29-58].

Allowable Subject Matter

Claims 8,9,11,19,20,22,30,31, and 33, are allowable over the prior art of record.

Claims 2,5,13,16,24, and 27, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As per claims 8,19, and 30, the prior art of record does not specifically teach either alone or in combination all of the claimed limitations. Claims 9,11,20,22,31, and 33 are allowable as being dependent upon allowable base claims.

As per claims 2,13, and 24, the prior art of record does not specifically teach both the limitations of (1) maintaining a flag to indicate which of the first or second data structures to use to indicate updates received after the command to for the consistency group and (2) to toggle the flag to indicate that data structure not currently indicated by the flag such that the flag identifies the data structure that indicates updates to the first storage site not included in the consistency group.

As per claims 5,16, and 27, the prior art of record does not teach merging the data of the first and second data structures to indicate data in the consistency group that needs to be copied

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to the third site, and wherein the other of the data structures would then be used to indicate updates to the data that that is not in the consistency group.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane M Thomas whose telephone number is (571) 272-4188. The examiner can normally be reached M-F 8:30 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt M Kim can be reached at (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shane M. Thomas



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